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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/792,266	03/02/2004	Tetsuya Otsuki	93191-000715	4239

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EXAMINER	
RODGERS, COLLEEN E	

ART UNIT	PAPER NUMBER
2813	

DATE MAILED: 05/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/792,266	OTSUKI ET AL.	
	Examiner	Art Unit	
	Colleen E. Rodgers	2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 March 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5 and 9-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 9-15* is/are rejected.

7)☒ Claim(s) *5 and 16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4/5/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action responds to the Amendment filed 13 March 2006. By this Amendment, claims 2 and 13 are amended and claims 6-8 and 17-19 are canceled.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 4, 9, 13 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by **Yoshinuma et al** (USPN 6,378,199 B1).

Regarding claim 1, **Yoshinuma et al** discloses a method of manufacturing a wiring board, comprising: forming a receiving layer **3b** from a thermosetting resin precursor [see col. 9, lines 45-50]; forming an interconnecting layer **3a** on the receiving layer **3b** from a dispersion liquid containing conductive particles [see col. 18, lines 42-52]; and applying heat to the receiving layer **3b** and the interconnecting layer **3a** to cure the thermosetting resin and to bond the conductive particles together [see col. 10, lines 16-24 and col. 18, lines 42-52].

Regarding claim 2, **Yoshinuma et al** discloses the method of claim 1 as described above, wherein a polyimide precursor is used as the thermosetting resin precursor and is polymerized by the heat [see col. 9, lines 51-55 and 59-63].

Regarding claim 4, **Yoshinuma et al** discloses the method of claim 1 as described above, wherein the receiving layer **3b** is formed on a base material **2** [see Fig. 5].

Regarding claim 9, **Yoshinuma et al** discloses a method of manufacturing a wiring board, comprising: forming a first receiving layer **3b** from a thermosetting resin precursor [see col. 9, lines 45-50]; forming a first interconnecting layer **3a** on the receiving layer **3b** from a dispersion liquid containing conductive particles [see col. 18, lines 42-52]; forming a second receiving layer **4b** on the first receiving layer **3b** and the first interconnecting layer **3a** from a thermosetting resin precursor [see col. 9, lines 45-50]; forming a second interconnecting layer **4a** on the second receiving layer **4b** from a dispersion liquid containing conductive particles [see col. 18, lines 42-52]; and applying heat to cure the thermosetting resin precursors of the first and second receiving layers **3b**, **4b** and to bond the conductive particles of the first and second interconnecting layers **3a**, **4a** together at a connecting portion of the first and second interconnecting layers **3a**, **4a** [see col. 10, lines 16-24 and col. 18, lines 42-52].

Regarding claim 13, **Yoshinuma et al** discloses the method of claim 9 as described above, wherein a polyimide precursor is used as the thermosetting resin precursor and is polymerized by the heat [see col. 9, lines 51-55 and 59-63].

Regarding claim 15, **Yoshinuma et al** discloses the method of claim 9 as described above, wherein the receiving layer **3b** is formed on a base material **2** [see Fig. 5].

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 3, 10-12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yoshinuma et al** (USPN 6,378,199 B1).

Regarding claims 3 and 14, **Yoshinuma et al** discloses the method of claims 1 and 9 as described above. Furthermore, **Yoshinuma et al** teaches in a further embodiment ejection of a dispersion liquid [see col. 3, lines 52-55]. It would have been obvious to one of ordinary skill in the art at the time of invention to use an ejection method for dispensing a solution containing conductive particles because **Yoshinuma et al** teaches that it is a known process.

Regarding claims 10 and 11, **Yoshinuma et al** discloses the method of claim 9 as described above. Furthermore, **Yoshinuma et al** teaches coating the conductive particles with a resin binder, which is thermally decomposed by laser [see col. 18, lines 42-52]. While **Yoshinuma et al** does not disclose specific temperature ranges for either the laser decomposition of the particle coating or the curing of the receiving layers and interconnecting layers, it would have been obvious to one of ordinary skill in the art at the time of invention to decompose the coating of the conductive particles a lower temperature than that at which the particles begin to sinter to the polyimide receiving layer in order to ensure that the coating is completely removed, thereby avoiding coating being trapped inside the conductive layer.

Regarding claim 12, **Yoshinuma et al** discloses the method of claim 9 as described above. Furthermore, **Yoshinuma et al** teaches that the thermosetting resin precursor of the second receiving layer **4b** may have photosensitivity before being cured; and that the second receiving layer **4b** may be patterned by using photosensitivity before curing by heat [see col. 3, line 66 to col. 4, line 8]. It would have been obvious to one of ordinary skill in the art at the time of invention to use a photosensitive material for the second receiving layer in order to make it possible to create wiring patterns as taught by **Yoshinuma et al**.

Allowable Subject Matter

6. Claims 5 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Specifically, the prior art of record failed to teach or make reasonably obvious the step of removing the base layer following the curing step.

Response to Arguments

7. Applicant's arguments filed 13 March 2006 have been fully considered but they are not persuasive. Applicant alleges that **Yoshinuma et al** fails to teach forming an interconnecting layer on a receiving layer from a dispersion liquid containing conductive particles. Examiner disagrees. Indeed, as Applicant points out, "Among the 14 methods noted, Yoshinuma notes that the wiring pattern layer (3) may be *connected to* the wiring pattern layer 4 by a dispensing method or a printing method" (see Remarks, page 9 of 11, emphasis in the original). This would seem to indicate that layers **3** and **4** are interconnects.

Applicant further alleges that **Yoshinuma et al** fails to teach that the wiring pattern layer (3) or the wiring pattern layer (4) is formed on the substrate by using a dispersion liquid containing conductive particles. Examiner disagrees. **Yoshinuma et al** discloses "...a method that a solution in which conductive fine particles are dispersed is laid on the multi-layer printed wiring board ... the conductive fine particles are precipitated and agglomerated in the heated portion to selectively form a conductive body" (see col. 18, lines 42-48).

Based on the above arguments, the claims are considered to be anticipated as described above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Colleen E. Rodgers whose telephone number is (571) 272-8603. The examiner can normally be reached on Monday through Friday, 9:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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